

of a primary or secondary amine with an unsaturated compound having a leaving group and using a nickel organophosphine complex to catalyze the reaction.

Applicants respectfully disagree that their invention is obvious over the cited art. Applicants submit that although all the references do teach a reaction of a primary or secondary amine with unsaturated compound with a leaving group (a halogen), the amines used in the references are chemically vastly different than those used in the instant invention. The amines used in the references are all either alkyl substituted amines, such as allylamine used in the '835 application, and dimethyl amine, used in Cramer and in the '311 patent, or aryl amines, such as aniline, used in the '311 patent. The amines used in the instant reaction are enamines, enamides, aryl amines or aryl amides; more broadly grouping these compounds, all amines used have a  $sp^2$  carbon next to the amine nitrogen.

Alkyl substituted amines are much more basic than these amines and therefore more reactive towards nucleophilic substitution, such as the amine alkylation reactions performed in the references and the instant invention. Applicants assert that one skilled in the art would not assume that a catalyst that activates alkyl-substituted amines towards nucleophilic substitution would also activate less basic amines such as enamines and enamides.

One example of an aryl amine is used in the '311 patent as well as in the instant invention, but the catalysts used in the instant invention are a improvement over those used in that reference. The reaction temperatures in the instant invention are significantly lower than those in the art, as shown in the table below. Lower temperatures are preferred for these reactions as less byproducts and degradation products result. This shows the nonobvious improvement of applicant's catalyst over the similar catalysts used in the '311 patent.

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|                              | Reactants  | Reaction temp. | Source                  |
|------------------------------|--|----------------|-------------------------|
| U.S. Patent<br>No. 3,914,311 | Chlorobenzene<br>+ aniline                         | 230°C          | Example 9,<br>Table VII |
| Application                  | Substituted<br>anilines +<br>$\beta$ -bromostyrene | 100°C          | Examples 39-40          |
| Application                  | Substituted<br>anilines +<br>4-iodotoluene         | 100°C          | Examples 45-47          |

In view of the foregoing discussion, allowance of the Claims 1-30 and new claim 31 is respectfully requested.

If anything further is required to advance the allowance of this application, the Examiner is invited to contact applicants' attorney.

Should any additional fee be required, please charge such fee to deposit account No. 04-1928.

Respectfully submitted;

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